RECEIVED
CENTRAL FAX CENTER
AUG 0 8 2006

AMENDMENTS TO THE CLAIMS

1. (previously presented) An antigenic composition comprising a heterologous antigen linked to the amino acid sequence set forth in SEQ ID NO:38, wherein said heterologous antigen and said amino acid sequence assemble as a hybrid particle.

2. (previously presented) The composition of Claim 1, wherein said heterologous antigen is inserted at a position within a loop region comprising residues 76 to 82 of SEQ ID NO:38.

3. (previously presented) The composition of Claim 2, wherein said position within said loop region is chosen from amino acid residues 77, 78, 81, or 82.

4. (original) The composition of Claim 2, wherein said position within said loop region is at amino acid residue 76.

5. (canceled).

6. (previously presented) The composition of Claim 1, wherein said heterologous antigen is inserted at a position chosen from amino acid residues 73, 75, N-terminal or C-terminal.

7. (previously presented) The composition of Claim 1, wherein said heterologous antigen is inserted at a position chosen from amino acid residues 44, 71, 72, 74, 83, 84, 85, or 92.

8. (previously presented) The composition of Claim 1, wherein said heterologous antigen is inserted at a position within a loop region comprising residues 76 to 82 of SEQ ID NO:38, and in a position outside said loop region.

9. (original) The composition of Claim 1, wherein said heterologous antigen is conjugated to said amino acid sequence.

PAGE 3/8 * RCVD AT 8/8/2006 9:32:08 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/20 * DNIS:2738300 * CSID:415 904 6510 * DURATION (mm-ss):01-22

10. (original) The composition of Claim 1, wherein said heterologous antigen comprises at least one B cell epitope.

11. (original) The composition of Claim 1, wherein said heterologous antigen comprises at least one T helper cell epitope.

12. (previously presented) The composition of Claim 1, wherein said amino acid sequence further comprises an artificial C-terminus of from 1 to 100 amino acids at the carboxy end of residue I^{149}.

13. (previously presented) The composition of Claim 12, wherein said 1 to 100 amino acids is chosen from K^{150}, A^{150}, $R^{150}R^{151}C^{152}$, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:12, SEQ ID:13, SEQ ID NO:14, SEQ ID NO:15, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, or SEQ ID NO:20.

14. (withdrawn) The composition of Claim 12, wherein said 1 to 100 amino acids is chosen from SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID:33, SEQ ID NO:34, SEQ ID NO:35, or SEQ ID NO:36.

15. (withdrawn) The composition of Claim 12, wherein said 1 to 100 amino acids is chosen from SEQ ID NO:42, SEQ ID NO:43, SEQ ID NO:44, SEQ ID NO:45, SEQ ID NO:46, SEQ ID NO:47, SEQ ID NO:48, SEQ ID NO:49, SEQ ID NO:50, SEQ ID NO:51, SEQ ID NO:52, SEQ ID:53, SEQ ID NO:54, SEQ ID NO:55, or SEQ ID NO:56.

16. (original) The composition of Claim 1, wherein said amino acid sequence further comprises at least one immune enhancer sequence.

PAGE 4/8 * RCVD AT 8/8/2006 9:32:08 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/20 * DNIS:2738300 * CSID:415 904 6510 * DURATION (mm-ss):01-22

17. (original) The composition of Claim 1, further comprising woodchuck hepatitis virus core antigen chosen from wild type woodchuck hepatitis virus core antigen and modified woodchuck hepatitis virus core antigen lacking a heterologous antigen.

18. (previously presented) A nucleic acid sequence encoding an antigenic hybrid woodchuck hepatitis virus core antigen, comprising a heterologous antigen inserted within the amino acid sequence set forth in SEQ ID NO:38.

19. (original) An expression vector comprising the nucleic acid sequence of Claim 18.

20. (canceled)

21. (withdrawn) A method, comprising:

a) providing:
   i) a mammalian subject; and
   ii) a composition comprising one or more of a polypeptide comprising a heterologous antigen linked to the amino acid sequence set forth in SEQ ID NO:38, said amino acid sequence comprising a loop region, and an expression vector encoding said polypeptide; and

b) administering said composition to said subject under conditions such that an immune response is generated.

22. (withdrawn) The method of Claim 21, wherein said immune response comprises one or more of lymphocyte proliferative response, cytokine response and antibody response.

23. (withdrawn) The method of Claim 22, wherein said antibody response comprises production of IgG antibodies.

24. (withdrawn) The method of Claim 23, wherein said IgG antibodies comprise an autoantibody.

PAGE 5/8 * RCVD AT 8/8/2006 9:32:08 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/20 * DNIS:2738300 * CSID:415 904 6510 * DURATION (mm-ss):01-22

25-35. (canceled).

36. (previously presented) A vaccine comprising a heterologous antigen linked to the amino acid sequence set forth in SEQ ID NO:38.

37. (previously presented) The vaccine of Claim 36, formulated for human administration.

38. (previously presented) The composition of Claim 1, wherein said heterologous antigen further comprises addition of at least one acidic amino acid.

39. (previously presented) The composition of Claim 1, wherein said heterologous antigen comprises a substitution of at least one basic amino acid with at least one acidic amino acid.

40. (previously presented) The composition of Claim 1, wherein said amino acid sequence set forth in SEQ ID NO:38 comprises an insertion of at least one acidic amino acid.

41. (previously presented) The composition of Claim 1, wherein said amino acid sequence set forth in SEQ ID NO.38 comprises a substitution of at least one basic amino acid with at least one acidic amino acid.

42. (previously presented) The vaccine of Claim 36, wherein the isoelectric point of said heterologous antigen is in the range of 3.0 to 6.0.

43. (previously presented) The composition of Claim 38, wherein the isoelectric point of said heterologous antigen is in the range of 3.0 to 6.0.

44. (previously presented) The vaccine of Claim 36, wherein the isoelectric point of said heterologous antigen is in the range of 4.0 to 5.0.

PAGE 6/8 * RCVD AT 8/8/2006 9:32:08 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/20 * DNIS:2738300 * CSID:415 904 6510 * DURATION (mm-ss):01-22

45. (previously presented) The composition of Claim 38, wherein the isoelectric point of said heterologous antigen is in the range of 4.0 to 5.0.

46. (previously presented) The vaccine of Claim 36, wherein the isoelectric point of said heterologous antigen is in the range of 3.0 to 4.0.

47. (previously presented) The composition of Claim 38, wherein the isoelectric point of said heterologous antigen is in the range of 3.0 to 4.0.

PAGE 7/8 * RCVD AT 8/8/2006 9:32:08 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/20 * DNIS:2738300 * CSID:415 904 6510 * DURATION (mm-ss):01-22